

forwarded to the President of the Board, or such as it may be determined to purchase in open market, immediately upon the completion of the apparatus ordered, at which time circulars will be published giving detailed instructions relative to the preparation of specimens for test, and stating minutely the information which will be demanded previous to their acceptance.

GUSTAVE THURET

ON the 10th of May France lost one of her most distinguished naturalists. M. Thuret left his home at Antibes in perfect health, and expired at Nice a few hours afterwards from an attack of angina pectoris.

Unlike many of his contemporaries, Thuret was not a voluminous writer. But his papers, though not numerous, are all extremely admirable, and his work has laid the foundation of our modern knowledge of the biological phenomena of the Algæ. Probably his earliest paper was an account of the antherozoids of *Chara* (1840). He was the first to detect the cilia upon these structures in any plant. In 1844 he published an account of the peculiar mode of asexual reproduction in *Nostoc*. In 1845, in conjunction with Decaisne, he described for the first time the antheridia and antherozoids of *Fucus*. In 1850 and succeeding years he published his admirable papers upon the zoospores of different groups of Algæ. In 1853 he established for the first time by actual observation, in the case of *Fucus*, the existence amongst Algæ of the phenomenon of fertilisation. In 1866, in conjunction with Bornet, he described the extremely remarkable phenomena of sexual reproduction amongst the *Florideæ*. They found not merely that the process of fertilisation was accomplished in a very peculiar and remote way, but also that, besides the effect produced on the germ-cell, a series of developments were induced in the parent plant as the result of it. In every group of Algæ the results which he achieved were of the most fundamental kind.

A man of independent wealth, he passed a great part of the year on his property at Antibes, on the shore of the Mediterranean. Bornet, his distinguished collaborator, lived with him. In the gardens which surrounded his house he had assembled one of the most remarkable collections of plants to be found growing in the open air in any part of the world. W. T. T. D.

NOTES

PUNCTUALLY at the time arranged, four o'clock in the afternoon of last Saturday, the *Alert* and the *Discovery*, accompanied by the *Valorous*, left Portsmouth for their work in the Arctic regions. No better equipped expedition, it may again be said, has ever left any country, and no previous British expedition has ever been so universally popular. Every available point on land was occupied by spectators who had come to see the departure of the expedition. The vessels in the harbour and the yachts and boats along the beach were dressed with flags, and as the two ships stood out to sea their course lay through a perfect flotilla of craft of all kinds, whose occupants cheered Capt. Nares and his companions on their way. Among the last messages received by Capt. Nares was a telegram from the Queen "wishing you and your gallant companions every success;" the telegram was accompanied by a packet, the contents of which did not transpire. In the morning the Lords of the Admiralty inspected the ships, and wished the expedition "God speed," Mr. Clements R. Markham accompanies his cousin, Commander Markham, as far as Disco. The ships arrived at Queenstown on Tuesday, the *Alert* and *Discovery* going on to Bantry Bay. The *Valorous* joined them yesterday, when the three proceeded on their way.

MR. GEORGE BENTHAM, F.R.S., has been elected a corresponding member of the French Academy of Sciences.

MR. CHARLES DARWIN has been appointed foreign honorary member of the Imperial Academy of Science, Vienna.

THE Hebdomadal Council of Oxford University have agreed to propose that in the Convocation to be held at the Enconia, or Commemoration, the honorary degree of D.C.L. be conferred on the following persons:—Sir W. R. Grove, F.R.S., Sir J. Lubbock, F.R.S., Mr. E. B. Tylor, F.R.S., Captain Douglas Galton, C.E., F.R.S., and Mr. C. T. Newton.

THE reception at the Royal Society on Wednesday week was a great success; there was a very large attendance of Fellows. There was plenty of opportunity for quiet talk, which was taken ample advantage of. Mr. Crookes repeated his interesting experiments.

GOVERNMENT have refused to send or pay the expenses of a commissioner to the forthcoming International Geographical Congress at Paris. One would have thought that, as much from a practically commercial as from a scientific point of view, this Congress, judging from its programme, is likely to be of the highest importance; and who more likely to reap benefit from such a Conference than the greatest naval and commercial power in the world? Government, however, have the excuse that the French Government simply approve of the Congress, and have refrained from stamping it with an official character.

INVITATION circulars have been issued for the Bristol Meeting by the British Association, whose sittings commence on August 25, under the presidency of Sir John Hawkshaw, C.E., F.R.S. The local secretaries are Messrs. W. Lant Carpenter and John H. Clarke.

M. EDOUARD COLLOMB, who for many years has been the Treasurer of the Geological Society of Paris, has just passed away at the age of seventy-four years. M. Collomb accompanied Agassiz in his Alpine travels. He also travelled during many years in Spain with M. de Verneuil, studying the mineralogical resources of the Iberian Peninsula. The result of these protracted explorations was the publication of the first geological map of Spain.

MR. HENRY WILLETT again appeals for funds to carry on the work of the Sub-Wealden Exploration to a depth of 2,000 feet. A week ago the boring had reached 1,080 feet. It has been decided to continue the boring to 1,500 feet, by which time all the available funds will be exhausted; to do this, 1,200*l.* are wanted, and we cannot think that for the want of so comparatively small a sum the first scientific boring in this country will be brought to a premature conclusion. The latest cones and fossils indicate that the boring is still in the Kimmeridge Clay, to the fauna of which *Ammonites Jason* must now be added.

THE acclimatisation of trout in Tasmania is certified by an official report, which states that in 1873 a total distribution of 4050 trout ova was made from the rivers of that country to the neighbouring colonies; 800 of these ova were sea trout, and the rest brown trout.

THE motion for diminishing the size of the type used in printing the *Comptes Rendus* was lost, because a number of members declared in the private sitting of the Academy that it was impossible for them to read the papers printed with the characters which had been proposed. Consequently it has been resolved that the number of pages given to each paper shall be diminished by one-third part of the number originally allotted.

THE Municipal Council of Paris have voted a sum of 500*l.* to pay the professors of a superior school of Anthropology, which will be opened next November in a building lent gratuitously

by the École de Médecine; no fees are to be charged from pupils. M. Wallon has granted a sum of 300*l.* yearly for laboratory expenses. Anthropological societies and private individuals have subscribed a fund; the shares are said to be worth 40*l.* Five courses of lectures are to be delivered, including a series by M. Broca on Craniology, by M. Dailly on Human Races, M. G. de Mortillet on Prehistoric Times. The number of lectures is to be increased as the resources of the association multiply.

ACTIVE preparations are being made for the exhibition of the French Geographical Society at the Pavillon des Flores. The large hall is almost finished, and is said to be of superior taste and magnificence.

FOR the first time in recent years the French Minister of Public Instruction is one of the leading members of the Cabinet. It is said that in the discussion on the new electoral law, M. Wallon intends to ask the Versailles Assembly to vote that ignorance be considered a disqualification, and that any elector be disfranchised who cannot read and write.

M. GEOFFROY SAINT-HILAIRE, the Director of the Jardin d'Acclimatation, Paris, has just instituted a new intermediate station for tropical plants at the Îles d'Hyères. Delicate plants will consequently not be taken at once from a hot to a cold atmosphere.

A MEMORIAL tablet, bearing an appropriate inscription, now marks the spot in Westminster Abbey where the remains of Dr. Livingstone are deposited.

A SCIENTIFIC Society has recently been established in Caius College, Cambridge, for the diffusion of scientific knowledge among the members of the College, for the reading of essays on scientific subjects, and for the holding of scientific discussions. The Society admits within the range of its discussions all sciences of observation. An interesting feature in the scheme of the Society's proceedings is that the first half-hour of each meeting is to be devoted to open discussion, to the answering of questions proposed by any member either at the time or at a previous meeting, or to the exhibition of specimens. The first president of the Society is Mr. B. Anningson, M.A., M.B., the newly-appointed Medical Officer of Health for Cambridge, and the secretary is Mr. Wm. Ewart. A number of papers have been read during the present term. The meetings have been well attended and the discussions well supported.

A SCIENTIFIC Society has been formed at Gloucester, chiefly in connection with the School of Science there, under the title of the Gloucester Philosophical Society. A programme of papers for the year has been issued. In addition to the regular monthly meetings, a course of six lectures on Structural Botany is being delivered by Mr. Allen Harker to the members of the Society. One or more excursions are to form a feature of the course. Gloucester has hitherto been rather apathetic than otherwise on science; this looks more healthy.

ON Nov. 23, at Balliol College, Oxford, there will be an examination for a Brackenbury Scholarship for the encouragement of Natural Science, worth 80*l.* a year for four years.

WE are very much surprised, and on all accounts it is greatly to be regretted, that the Legislature of Massachusetts has rejected the Bill for a new Survey of the State to which we have already referred. Massachusetts is known all the world over as being one of the most intelligent and best educated States in the Union. Evidently, however, the State schools are too strong in arithmetic; a Mr. Plunkett brought some extraordinary calculations before the House, showing that the Survey would cost nearly a million and a half of dollars and occupy nearly a hundred years! Besides an advanced and accomplished calculator, the Massachusetts Legislature is also happy in the possession of a "funny

man," a Mr. Rice, who seems occasionally to relieve the severity of Mr. Plunkett's extreme calculations by bright flashes of buffoonery. Mr. Rice described the proposed Survey as "sending young men with muck-rakes to scratch the sterile soil of the State and make pictures."

THE Indian Museum at South Kensington was opened to the public on the 1st instant.

THE newly issued part of the Transactions of the Zoological Society of London contains an exhaustive memoir on the birds inhabiting the Philippine Archipelago, illustrated by twelve coloured quarto plates.

PROF. HALL GLADSTONE completed his course of lectures at the Royal Institution on chemical force on Tuesday, and exhibited a new compound he had just discovered, Zinc Ethylchloride, $\text{Zn} \left\{ \begin{array}{l} \text{C}_2\text{H}_5 \\ \text{Cl} \end{array} \right\}$

THE necessity of utilising the large rivers for maritime navigation is becoming one of the questions of the day in France. The Municipal Councils of Lyons and Marseilles are considering the means of connecting Marseilles with the Rhône by a canal practicable for shipping; while the Municipal Council of Paris have appointed a commission to devise means to render the Seine navigable from Rouen to Paris.

PROF. DRAKE, the eminent Berlin sculptor, has just finished a colossal statue of Alexander von Humboldt, ordered by the city of Philadelphia; it is nine feet high, and will be shipped to its destination early in June.

A TELEGRAM, dated Berlin, May 28, states that the Tashkend Government has sent an expedition to Hissar, an unknown principality east of Shahrissabsk, and north of the Afghan frontier. The members of the expedition are mostly scientific.

BAILLIÈRE, of Paris, has published an analytical "Table des Matières" of the first ten volumes (1864-74) of the *Revue Scientifique*. The Table forms a very useful index to much of the scientific work of the last ten years.

A THICK Supplement (No. 41) to *Petermann's Mittheilungen* has just been published, containing a multitude of statistics on the population of the earth, by E. Behm and H. Wagner. They estimate the total population of the globe at 1,396,842,000, distributed as follows:—Europe, 302,973,000; Asia, 798,907,000; Africa, 206,007,000; America, 84,392,000; Australia and Polynesia, 4,563,000.

HEFT VI. of *Petermann's Mittheilungen* contains a beautiful map illustrative of Dr. Rohlfs' travels in the Libyan Desert during 1873-74. It embraces the portion of North Africa between 25° and 29° N. lat., and 26° and 32° E. long. This map, along with the explanatory letterpress by Dr. Jordan and Dr. Rohlfs which accompanies it, will be found to add in a very important degree to an accurate knowledge of this hitherto imperfectly known region. The map shows the route not only of Rohlfs' expedition, but of Schweinfurth and several other explorers, from Krump (1701) downwards.

IN a paper by Prof. J. D. Dana, in the May number of Silliman's *American Journal*, on Dr. Koch's evidence with regard to the contemporaneity of Man and the Mastodon in Missouri, the author comes to the following conclusions:—Taking all things that have been reviewed into consideration, he thinks there is sufficient reason for regarding Dr. Koch's evidence of the contemporaneity of Man and the Mastodon *very doubtful*. He hopes that the geologists of the Missouri Geological Survey now in progress will succeed in settling the question positively. The contemporaneity claimed will probably be shown to be true for North America by future discoveries, if not already so esta-

blished; for Man existed in Europe long before the extinction of the American Mastodon.

AN interesting innovation has been tried with great success at the National Library of Paris. It has been suggested by M. Belliard, one of the principal librarians, who was appointed the head of the Receiving Office a few months ago, to publish a monthly paper containing a descriptive list of the works which have been presented to the library, or purchased during the preceding months. The works sent by the Home Office for the *dépôt légal* are not registered in that paper: there is for these a special publication. The first number has been issued, and is a lithographed 12mo pamphlet of thirty-two pages, having about two hundred entries. A copy will be presented to the great libraries abroad and in France.

MR. A. J. HARVEY, known to many as the advocate of various schemes of social improvement, now propounds a scheme for a "People's Museum of Physical Astronomy, to be erected and endowed by Government." "The object and design of a Museum of Physical Astronomy," Mr. Harvey states, "should be to popularise, familiarise, enlighten, and instruct the people in whatever can be illustrated, taught, and told, through the eye alone and without the aid or necessity of books, &c., of Physical Astronomy." It should be "a museum worthy of the intelligence and wealth of this great country, in which the whole visible universe is roughly presented to us, exhibited upon a colossal yet exact scale, and wherein the actual motions of the heavenly bodies are visible to the naked eye, wherein vast space can be spanned by the hand and great epochs of time counted with ease by the mind."

WE have received from Messrs. Blackwood and Sons an interesting lecture by Dr. Page, entitled "Recreative Science; a Plea for Field Clubs and Science Associations." It ought to be circulated extensively among our field-clubs and other local scientific societies.

ONE of the most important of the many valuable U.S. Government documents published during a few months past is the Annual Report of the United States Geological and Geographical Survey of the Territories for 1873, as prepared by Dr. Hayden, being a volume of 730 pages, profusely illustrated with plates and sections, and exhibiting the physical geography, the sectional geology, the mining, and the natural history of the country. The volume consists of several sections. The first, that of Geology, Mineralogy, and Mining Industry, was prepared by Dr. Hayden, Mr. Marvine, Mr. Peale, and Dr. Endlich. The second embraces special reports on Palæontology, on the Fossil Flora, by Prof. Lesquereux, and on the Vertebrates by Mr. Cope. Part third, Zoology, contains articles on the recent Invertebrates, by Lieut. Carpenter, Dr. Packard, Baron Osten-sacken, Mr. Ulke, Dr. Hagen, Mr. S. J. Smith, Prof. Verrill, and Mr. William G. Binney. Part fourth, upon the Geography and Topography, is from the pen of Mr. James T. Gardner, geographer of the expedition. There is also an appendix by Mr. A. R. Marvine.

THE Rev. G. H. Hopkins gives the following method for fixing the curves which steel filings take when under the action of a bar magnet. The filings having been prepared so as to be as nearly the same size as possible, and that size very minute, are pound into a mortar, and a small quantity of finely powdered resin is added; these are stirred together until the two substances are completely mixed, and then, considerable pressure being exerted upon the pestle, they are rubbed until the resin adheres to the filings in a very fine coating. The filings can then be sprinkled as usual, and the curves formed. It is best (after the curves are formed) to heat the plane surface, glass, paper, or wood, according to convenience, over a stove or in an

oven, which easily allow it to be sufficiently as well as uniformly heated. For projecting the curves on a screen, the following, we believe, is a very effective method. Cover the glass with thin gum-water, allow it to dry perfectly; obtain the curves on the dry gummed surface; finally, breathe on the plate: the gum is thereby softened and the curve permanently fixed. Substituting corresponding shaped pieces of paper for the magnets (a pin-hole can be used to indicate the N. pole), the curves can be covered with a second plate of glass, and thus preserved as an ordinary lantern slide.

A VERY satisfactory report has been issued for the past year by the committee of the Devon and Exeter Albert Memorial Museum, &c. Several valuable additions in natural history have been made to the Museum, and in the reference library there has been an addition of eighteen per cent. in the issue of works on science and art. The institution as a whole continues to work so well that more room and better accommodation are urgently demanded.

THE additions to the Zoological Society's Gardens during the past week include a Grey-cheeked Monkey (*Cercopithecus albigena*), a Marsh Ichneumon (*Herpestes paludosus*), an Angolan Vulture (*Gypohierax angolensis*) from W. Africa, presented by the late Mr. H. Ansell; a Syrian Bear (*Ursus syriacus*) from Western Asia, presented by Mr. W. Kirby Green; an Australian Cassowary (*Casuarius australis*) from Australia, presented by Mr. E. P. Ramsay; a Black-necked Stork (*Xenorhynchus australis*) from Australia, presented by Mr. C. Moore; two Egyptian Geese (*Chenalopex aegyptiaca*) from W. Africa, presented by Mr. R. B. N. Walker; three Chestnut-eared Finches (*Amadina castanotis*) from Australia, presented by Mrs. G. French Angas; a Common Raccoon (*Procyon lotor*) from N. America, presented by Mr. Wesson; a Reeves's Muntjac (*Cervulus reevesi*) born in the Gardens.

SCIENTIFIC SERIALS

The American Journal of Science and Arts, May.—The first article is a continuation (No. 5) of a series of notices on recent earthquakes, by Prof. Rockwood. The second is an inquiry by Prof. J. D. Dana on Dr. Koch's evidence with regard to the contemporaneity of Man and the Mastodon in Missouri. (See Note, p. 96.)—Mr. Carey Lea communicates a short note on the influence of colour upon reduction of light, and Prof. Rowland a description of a new diamagnetic attachment to the lantern.—The geological articles are the Primordial Strata of Virginia, by W. Fontaine, and the Age of the Southern Appalachians, by F. H. Bradley.—The contributions from the Physical Laboratory of Harvard College are on the construction of Gauguin's galvanometer, on a new form of magneto-electric engine, by W. R. Morse, and some remarks by S. Newcomb on the Transit of Venus.

THE *Journal de Physique théorique et appliquée*, April 1875, contains the following original papers:—Researches on thermodiffusion, by J. Violle.—Determination of the velocity of light and of the sun's parallax, by M. A. Cornu.—On some polarisation experiments, by M. Bertin (last paper).—On an apparatus destined to get glass penetrated by the electric spark, by MM. Terquem and Trannin.—The number contains also several abstracts from papers taken from other serials.

Der Naturforscher, March 1875.—From this part we note the following papers:—On the influence of the density of metals upon their magnetisation; new researches made by Herr Börnstein with iron, nickel, and cobalt.—On the meteorite of Roda (in the Spanish province of Huesca), by Herren Tschermak and Lang.—On the genetic classification of the flora of Australia, by C. von Ettinghausen.—On the shooting stars observed on Nov. 13 and Dec. 10, 1874, at the Toulouse Observatory, under the direction of M. Gruy.—On vegetable mucus, by Herren Kirchner and Tollens.—On the action of hydrochloric acid upon lead-antimony alloys, by Herr H. v. d. Planitz.—On the behaviour of hydrocarbons under restricted oxidation, by M. Berthelot.—On